REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-6 and 9 are currently being prosecuted. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

Entry of Amendment

Since the Applicants are submitting the present Amendment along with a Request for Continued Examination, Applicants submit that entry of the present Amendment as well as full consideration thereof is appropriate.

Rejection Under 35 U.S.C. § 103

Claims 1 and 3-5 stand rejected under 35 U.S.C. § 103 as being obvious over Fan (U. S. Patent 6,807,342) in view of Tehrani (U. S. Patent 5,430,574). This rejection is respectfully traversed.

The Examiner points out that Fan shows a tunable filter with a first optical fiber 24 and a second optical fiber 22 and a high reflectivity layer 19 and a MEMS-based reflector including a base 16, an aperture and a multi-layer film. The Examiner admits that Fan lacks the first and second optical fibers including collimators. The Examiner relies on Tehrani to show the use of collimators on the optical fibers.

Applicants submit that claim 1 is not obvious over the two cited references. The Examiner has stated that the reflector of Fan is a MEMS-based reflector. Fan shows two types of

resonators. The first is MEMS-based as suggested by the Examiner. However, Applicants submit that Figure 4 is a piezoelectric type and not a MEMS-based reflector. Further, the process for making the Fan reflector involves a complex flip-chip bonding process that has a high manufacture cost. Thus, the reflector is made of many separate components such as an aluminum shelf 13, nitride overlay 14, grounded conductive disk 16, and silicon slab 21. These components must be assembled with high precision.

This differs from the present invention where the reflector is a single element and not composed of multiple components. Applicants have now amended claim 1 to refer to the reflector as being a one-piece reflector. This is clearly seen in Figures 1 and 2, where the base 300 has an aperture 301 and multi-layer film extending over the aperture. This one-piece arrangement is easier to manufacture and involves less cost.

Furthermore, claim 1 has also been amended to describe that the resonance cavity defined between the curved lens and the second collimator determines the resonance frequency. This is not seen in Fan. In the first embodiment of Figure 2, the resonance frequency is determined by a length of the cavity 17 between the bottom base and the top dielectric layer. In the embodiment shown in Figure 4, the resonance frequency is determined by the length of the cavity formed between the bottom base and the top slab. In the present invention, the resonance frequency is determined by the cavity that is defined between the curved lens and the collimator mounted on an optical fiber. Neither of the references cited by the Examiner teaches that the resonance frequency is determined by a distance between the curved lens and the collimator. Accordingly, Applicants submit that claim 1 is allowable for this reason also. By having this configuration,

the resonance frequency is easily determined by simply adjusting the distance between the collimator and the curved lens.

Furthermore, Applicants submit that that the Examiner has misconstrued the Fan reference. The Examiner has referred to fiber 24 as being the first optical fiber and fiber 22 as being the second optical fiber. As is clearly seen in Figure 2 of the reference, fiber 22 receives the input and fiber 24 delivers the output of the filter. It is common to refer to the input fiber as the first and the output fiber as the second in this type of arrangement. However, in order to make this perfectly clear, Applicants have also added claim 9 which specifically points out that the first collimator is the input and the second collimator is the output. The Examiner has relied on fiber 22 as being the second collimator in order to meet the terms of the claim. Applicants submit that this is incorrect and that fiber 24 should be considered the second collimator. Under this understanding, it is not possible to read the terms of claim 1 on this arrangement. In particular, the claim states that the resonance cavity is defined between the curved lens and the second collimator. Thus, the reference does not show the resonance cavity defined between the collimator 24 and the curved lens. Accordingly, Applicants submit that claim 1 is additionally allowable based on this fact.

The Examiner has relied Tehrani to show the use of collimators. However, even if this reference does teach this feature, it does not aid Fan in overcoming its deficiencies as noted above.

Furthermore, it is noted that the layers 18' and 19' in Figure 4 of Fan are interference filters and described as "mirrored ends of the fibers" (column 3, lines 14-15). According to

claim 1, the high reflectivity layer is coated on the end of the second collimator, however, the end of the first collimator has an anti-reflection layer (claim 6) instead. Accordingly, Applicants submit that Figure 4 of claim 6 cannot meet this limitation.

Claims 2-6 and 9 depend from claim 1 and as such are also considered to be allowable. In addition, these claims recite other features that make them additionally allowable. In particular, claim 6 describes the anti-reflection layer and claim 9 describes the input and output of the filter in regard to the collimators. Applicants submit that these limitations are further allowable.

Claim 2 stands rejected under 35 U.S.C. § 103 as being obvious over Fan in view of Tehrani and further in view of Domash et al. (U.S. Published Application 2003/0072009). Claim 6 stands rejected under 35 U.S.C. § 103 as being obvious over Fan in view of Tehrani and further in view of Huang (U. S. Patent 6,263,128). These rejections are respectfully traversed.

The Examiner relies on Domash et al. to teach a heat actuated type filter. The Examiner relies on Huang to show an anti-reflection layer coated on the end of the first collimator. Applicants submit that even if these references do show these features, these claims remain allowable based on their dependency from allowable claim 1. Further, in regard to Huang, Applicants submit that it would not be obvious to modify Fan in view of the fact that column 3, lines 14-15 of Fan clearly point out that the end of the fiber is a reflective layer and, accordingly, could not be the anti-reflective layer. Accordingly, these claims are also allowable.

Conclusion

In view of the above amendments and remarks, it is believed that the claims clearly distinguish over the references relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejection and allowance of all of the claims are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse (Reg. No. 27,295) at the telephone number of (703) 205-8000, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: February 27, 2006

Respectfully submitted,

By _____

Joe McKinney Muncy
Registration No.: 32,334 #43,368
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicants